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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/960,366	09/24/2001	Makoto Miyamoto	500.35843CC2	8432

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EXAMINER	
ANGEBRANNDT, MARTIN J	
ART UNIT	**PAPER NUMBER**
1756	5

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

5KB

Office Action Summary	Application No.	Applicant(s)	
	09/960,366	MIYAMOTO ET AL.	
	Examiner	Art Unit	
	Martin J Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32,39,40,42 and 43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32,39,40,42 and 43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

1. The response of the applicant has been read and given careful consideration. The rejection of the previous office action are withdrawn based upon the amendment to the claims and new rejection are presented. Therefore the arguments of the applicant are moot and no response is warranted.

2. Claims 42 and 43 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 32 upon which these claims depend already recites Zinc Sulfide (ZnS) as being present in the first and second protective layers. The refractive index of this material is 1.8.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 32,39,40 and 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. '063, in view of Hirotsune et al. '649.

Yamada et al. '063 teaches with respect to figure 3C, a substrate (1), a zinc sulfide/silicon dioxide layer (2), a GeN or GeNO layer (8), a phase change GeSbTe recording layer (3), a second 5 nm GeN or GeNO layer (8), a second zinc sulfide/silicon dioxide layer (4), a Ni-Cr reflective layer (5), an protective layer (6). When GeN is used, the thickness is 5 nm. (13/22-36 and 15/52-57) .

Hirotsune et al. '649 teaches optical recording media which comprise a substrate, a lower protective layer, a GeSbTe recording layer, an upper protective layer, a first reflective layer and a second reflective layer. Useful compositions for the recording layer are disclosed in columns 9 and 10. Useful protective layer compositions and the use of multilayers thereof are disclosed. (12/50-67) Grooved substrates are disclosed. (13/1-13) The use of materials and thicknesses which result in a first reflective layer which has an attenuation factor of less than 4 is disclosed, including the use of materials such as Mo, Ni, Fe, Cr, Ti, W, Ta, Co, Sb, Mg and V. (16/7-24) The thickness of the first layer may be less than 30 nm , preferably less than 15 nm (16/41-45). The second reflective layer may contain Al, Cu, Au and alloys thereof with additives Mo, Pd and Pt (13/32-14/2 and 16/46-17/17). The thickness of the second reflective layer should be between 30 and 200 nm. (13/65-14/2) For claim 31 see figures and embodiment 12, which uses a polycarbonate substrate, coated with a 125 nm ZnS-SiO_2 film, a 125 nm CrGeSbTe recording film, a 20 nm ZnS-SiO_2 film, a first reflective layer of Mo having a thickness of 15 nm and a second reflective layer of 10 nm of Al. See also text throughout the twelfth embodiment including the replacement of Mo with other metals and the replacement of Al with various alloys.

It would have been obvious to one skilled in the art to modify the invention of Yamada et al. '063 by using a 5 nm thickness of GeN for the inner protective layers (8) based upon the disclosure to do so and by adding a second reflective layer to increase the reflectivity as taught by Hirotsune et al. '649.

5. Claims 32,39,40 and 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshio JP 05-217211, in view of Hirotsune et al. '649.

Yoshio JP 05-217211 teaches with respect to figure 1, a substrate (1), a zinc sulfide/silicon dioxide layer (2-1), a 10 nm silicon nitride layer (2-2), a phase change GeSbTe recording layer (3), a second 10 nm silicon nitride layer (4-2), a second zinc sulfide/silicon dioxide layer (4-1), an Al-Ti reflective layer (5). [0013-0016] The use of other materials, such as nitrides and carbides for the inner protective layers and thicknesses of 5-50nm is disclosed. [0008,0010].

It would have been obvious to one skilled in the art to modify the invention of Yoshio JP 05-217211 by using other thicknesses such as 5-8 nm for the inner protective layers 2-2 and 4-2, rather than the 10 nm used in the examples based upon the disclosed equivalence and by adding a second reflective layer to increase the reflectivity as taught by Hirotsune et al. '649.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

ZnS limitation

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranndt whose telephone number is 703-308-4397. The examiner can normally be reached on Mondays-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703-308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Martin J Angebranndt
Primary Examiner
Art Unit 1756

October 21, 2003